WWF for a living planet®




Payments for Environmental Services

An equitable approach for reducing poverty and conserving nature

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1. Introduction

The concept of payments for environmental services (PES) has received substantial interest in recent years as a way of creating incentive measures for managing natural resources, addressing livelihood issues for the rural poor, and providing sustainable financing for protected areas. The basic idea is that those who "provide" environmental services by conserving natural ecosystems should be compensated by beneficiaries of the service.

Natural ecosystems provide a wide range of environmental services[1] from which people benefit, and upon which all life depends. These include provision of food, fuel, building materials, and freshwater; climate regulation; flood control; nutrient and waste management; maintenance of biodiversity; and cultural services, to name a few. Collectively, the value of global environmental services has been estimated at US$33 trillion, higher than the entire world gross national product (Constanza, 2005).

While the benefits of environmental services are public goods, the cost of ensuring their provision often falls on local land managers. As land is usually managed for private benefit, it is generally more attractive for land managers to convert their land to alternative uses such as agriculture rather than maintain it in its natural state. This is particularly the case for poor, marginal land owners and users.

As a result, and despite the relative enacting of legislation to prevent this, natural ecosystems continue to be degraded or lost at an alarming rate, with nearly two-thirds of the world's environmental services now under threat (Millenium Ecosystem Assessment, 2005). Indeed, many argue that the failure of society to compensate land managers for conserving these services is a key contributory factor to the rapid and environmentally damaging changes in land use that are taking place globally (Pagiola et al, 2005).

PES is a new market-based approach to conservation that aims to change incentives for land use in order to maintain or restore natural ecosystems so that they continue to provide the desired environmental service(s). The basic principle is that those who "provide" environmental services should be rewarded for doing so.

This is achieved through a variety of arrangements that transfer rewards from those who benefit from an environmental service to those who conserve, restore, and manage the natural ecosystem which provides it (see Wunder, 2005). Rewards may be monetary or in kind, may involve private sector or government financing, and can be made at local, national, and global levels. To be effective, the reward to the land manager must make the net benefits derived from maintaining environmental services greater than those derived from alternative land uses. Alternatively, PES can be applied in combination with other sources of finance for protection of natural resources.

PES has enormous potential to encourage and finance conservation efforts. This is especially important in the current era of increased funding needs for the environment, as well as in the securing of global commons. PES may also succeed where other conservation approaches have failed, by increasing the appeal of conservation practices to land managers such as

Box 1

Ecosystem services and poverty

The strong link between how degradation of environmental services affects poverty was recently highlighted in the context of achieving the Millennium Development Goals (MDGs).

Agreed to in September 2000, the MDGs aim to halve the number of people living in poverty by 2015. However, the recently published Millennium Ecosystem Assessment concludes that degradation of environmental services is a significant barrier to achieving these goals — and that this impediment could grow significantly worse over the next 50 years as global GDP increases 3-6 fold, accompanied by an expected explosion in the consumption of important ecosystem services.

Furthermore, the assessment found that the harmful effects of environmental service degradation are being borne disproportionately by the poor, and are often the principal drivers of poverty and social conflict. The report concludes that "any progress achieved in addressing the MDGs of poverty and hunger eradication, improved health, and environmental sustainability is unlikely to be sustained if most of the environmental services on which humanity relies continue to be degraded" (Millennium Ecosystem Assessment, 2005).

[1] Also known as ecosystem services

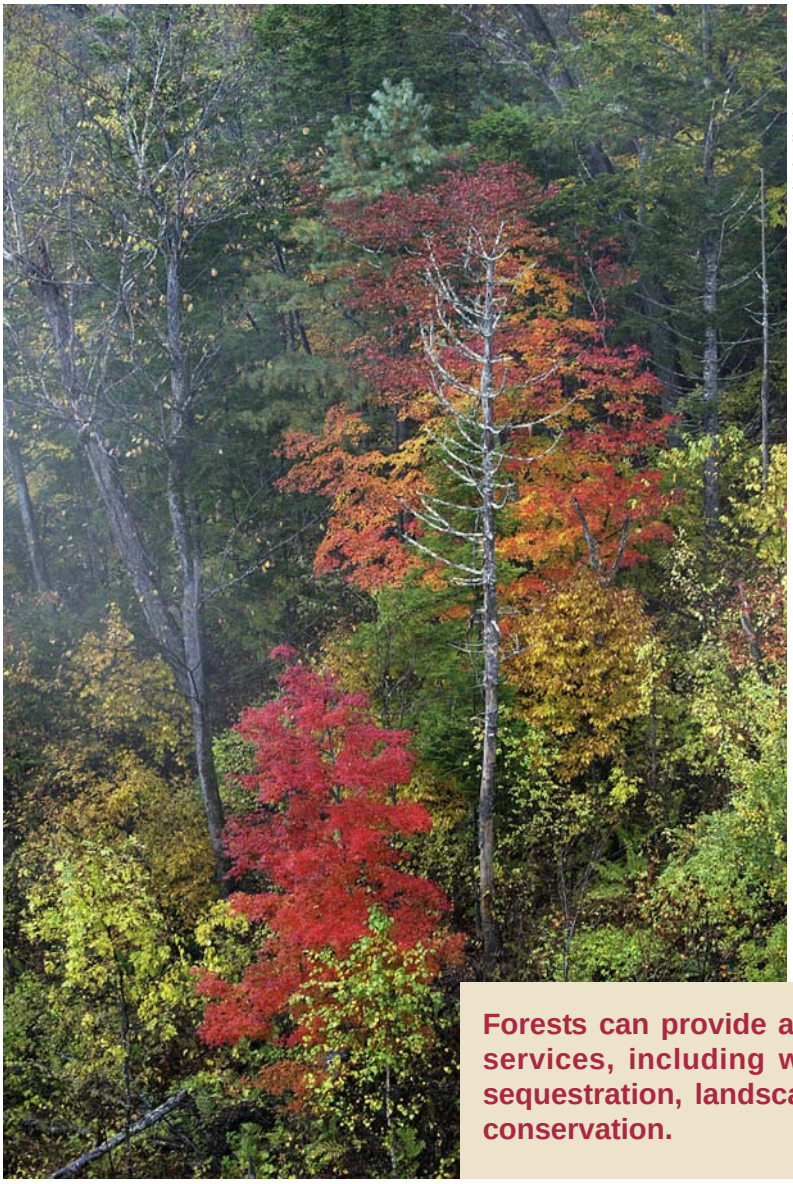
farmers.

Certainly, in conjunction with other approaches, PES could become a central part of efforts under the Convention on Biological Diversity (CBD) to find sustainable sources of funding for protected areas.

Although not originally designed to do so, PES is also expected to have a positive impact on the rural poor, both as beneficiaries of PES schemes and through conservation of the natural ecosystems upon which they are reliant for their livelihoods, health, and security. In addition, by providing a means for dialogue and agreement, PES schemes may help poverty alleviation programmes run more efficiently through the establishment of well-defined relations between natural and social capital. PES also has a potential role in solving social conflicts, such as those between extractive industries and local communities. Furthermore, by stimulating the development of new skills and strengthening the cooperative and hierarchical arrangements on which the poor often depend, PES can have positive consequences for welfare.

Not surprisingly, there is high-level interest in PES. A number of schemes are currently operating around the world involving governments, business, government aid agencies, and non-governmental organizations. Although most schemes are still in their infancy, there is already an emerging consensus on several key constraints and opportunities to the provision of poverty reduction and sustainable management of natural resources through PES.

WWF's approach of equitable PES, which it is developing and implementing with partners including CARE and IIED, aims to address these constraints by finding a balance between conservation and development outcomes; by delivering conservation of biodiversity with significant benefits to the poor; and by doing so in a just and equitable way.



Forests can provide a full range of environmental services, including watershed services, carbon sequestration, landscape beauty, and biodiversity conservation.

2. Common approaches to PES

A number of PES schemes are currently operating around the world. While these are largely still in their infancy, there is a growing understanding of the potential of PES to promote conservation and improve livelihoods of the rural poor. There is also already an emerging consensus that several key constraints exist to successful PES.

2.1 Overview of current PES schemes

PES is a generic term for a variety of arrangements where local communities, farmers and other water and land managers are paid for conservation activities that deliver environmental services (see Table 1 for some examples).

To date, the four main environmental services that have been addressed by PES are watershed services, carbon sequestration, landscape beauty, and biodiversity conservation (Table 1). There is some crossover between these: for example, preserving a natural forest for its carbon sequestration services may also help with provision of watershed services, biodiversity conservation, and/or landscape beauty.

Four main approaches to PES have emerged, determined largely by what is driving the scheme: conservation goals, social goals, market goals, or governmental goals. (Table 2).

Most current PES schemes are local level arrangements and involve spontaneous, private market-type arrangements. Such schemes tend to be modest in scale, and are very common in nature-based tourism and protection of small watersheds. Large PES schemes tend to be government driven, working at the state and provincial level (e.g., in Australia, Brazil, China, and USA), the national level (e.g., in Colombia, Costa Rica, and China), and the international level (e.g., the EU). Large schemes can also involve PES markets created by regulation, such as carbon sequestration markets created by the Kyoto Protocol on Climate Change.

2.2 Limitations and constraints to traditional PES schemes

The current tendency is that the majority of current PES schemes are small in size, cumbersome to manage, and not rural-poor friendly. Each of the four main approaches has different limitations that can hinder the flow of large-scale benefits to conservation efforts and the rural poor (Table 2).

One problem is that many PES schemes were initially designed as means of financing natural resource management, with potential livelihood considerations added later. A major concern is

Box 2

NGOs, international organizations, and GAAs involved in PES schemes

- CARE
- Center for International Forestry Research (CIFOR)
- Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)
- Conservation International (CI)
- Danish International Development Agency (DANIDA)
- Directorate-General for International Cooperation (DGIS) of theNetherlands Ministry of Foreign Affairs
- Edinburgh Centre for Carbon Management
- Forest Trends
- Global Environment Facility (GEF)
- German Technical Cooperation (GTZ)
- Inter-American Development Bank (IDB)
- International Fund for Agricultural Development (IFAD)
- International Institute for Environment and Development (IIED)
- IUCN–The World Conservation Union
- Katoomba Group
- Rewarding the Upland Poor in Asia for Environmental Services They Provide (RUPES)
- The Nature Conservancy (TNC)
- United Kingdom Department for International Development, Forestry Research Programme (DFID)
- United Nations Environment Programme (UNEP)
- United Nations Food and Agriculture Organization (FAO)
- Wildlife Conservation Society (WCS)
- Winrock International
- World Agroforestry Centre (ICRAF)
- The World Bank
- WWF

that the poor will actually become worse off due to a PES scheme, for example as buyers of a service that was previously free. There is also the danger that the poorest and most marginalized will become further marginalized if they cannot participate effectively in the scheme.

Different analyses of current PES schemes have identified various common constraints. These include the willingness or even ability and capacity of potential buyers to pay for environmental services; willingness to sell; high transaction costs; property rights; and enabling policy and legislation (Grieg-Gran and Bann, 2003; Waage et al., 2006; see also Table 1, Table 2, and Box 3).

One of the biggest challenges is the identification of buyers. Problems include a lack of awareness,

Table 1 Overview of environmental services currently addressed by PES

Environmental service	Natural ecosystem	PES examples[1]	Limitations to PES[2]
Watershed services (flood control, erosion control, sedimentation control, water quality control, soil salinization control, maintenance of aquatic habitats, and maintenance of dry season flows)	Forests Freshwater	Lower watershed users (industry, municipalities, etc.) pay upper watershed communities for land management practices that ensure continued supply of freshwater Public moneys are used to pay farmers to adopt rural conservation practices (e.g., not using pesticides, maintaining natural forests or vegetation, planting trees, etc.) Land users investing in activities that reduce soil and water salinity (e.g., tree planting) are issued salinity credits that they can sell to point source polluters	Until recently, suppliers of watershed services have generally lacked leverage for demanding payment; however this is improving with new government regulations for improved water quality in more developed countries, as well as improved buyer understanding of the benefits provided by watersheds and the growing threats they are facing
Carbon sequestration	Forests	Carbon-polluting companies pay for tree planting and forest conservation activities, either in their country or another country	Uncertainties over rules for carbon-trading at the international level High transaction costs Uncertainties related to long-term effectiveness
Landscape beauty	All	Tour operators pay landowners for access to areas of high scenic beauty or containing charismatic megafauna	Market for landscape beauty services is still relatively immature, mostly dominated by government provisions and characterized by below-cost pricing
Biodiversity conservation	All	Governments give tax breaks to people setting aside land for conservation Companies, governments, GAAs, and/or NGOs pay for conservation activities Consumers pay for food products produced in a manner that protects biodiversity Pharmaceutical companies pay for conservation of forests as potential future sources of medicine	Most biodiversity conservation services are intangible, making them difficult to package for sale, and rarely consumed by a clearly identifiable clientele Threshold effects in the service supply (e.g., forest areas below a certain size will fail to deliver the demanded biodiversity) make it difficult to portion out services to individual buyers High transaction costs

[1] These examples are by no means comprehensive
[2] Source: Grieg-Gran and Bann (2003)

the feeling that PES schemes are too risky, and a lack of clarity over what is being bought. The latter concern stems from uncertainties relating to the linkages between environmental services and specific practices for management of natural resources.

Another challenge is the actual setting up of the PES scheme. Barriers here include high transaction costs for identifying sellers and assessing their services as well as difficulties with negotiating and structuring deals and ensuring accountability and transparency. The main problem is a lack, on both sides, of necessary technical skills and knowledge relating to land management practices in specific ecological contexts that will lead to maintenance of the desired ecosystem service(s) (Waage et al., 2006).

2.3 The role of intermediary organizations

In their assessment of barriers to PES, Waage et al. (2006) identified the role of intermediaries and specialists in providing technical assistance and capacity building to all parties involved in setting up a PES scheme, as well as in administering and managing the scheme. Indeed, most PES schemes already involve various non-governmental organizations (NGOs), international organizations, and government and aid agencies (GAAs) as facilitators, capacity builders, and intermediaries (Box 2), as well as providers of project development funds.

Clearly, intermediary organizations involved in PES schemes must have relevant skills, contacts, and areas of experience. This ranges from country or regional knowledge of the linkages between specific management practices and environmental services, to the know-how for establishing accountability and transparency mechanisms for money exchange and deal security.

Table 2 Summary of traditional PES approaches[1]

Approach	PES definition	Motivation	Environmental Services (ES)	Focus	Limitations
Pro-market	Narrow: limited to markets for ES	Efficiency gains, economic development	Unbundled	Valuation of ES, conditionality, efficiency, market pricing	Most market-based schemes are small scale, hence a marginal source of both ES to users and income to providers
Social development	Broad	Improved livelihoods for providers	Unbundled	Property rights, entitlements, social capital, income needs	Issues of equity and access to basic services: for example, in some cases PES schemes have benefited “richer” or well-entitled farmers and land managers rather than poorer, more disadvantaged groups PES approaches face resistance in many developing countries
Conservation	Broad	Sustainable financing for conservation	Wary of unbundling	Overall ecosystem integrity and conservation gains	Unbundling of ES risks losing funding for less “marketable” services, or pitching one ES against another
Governmental	Broad	Mixed; securing ES may only be a minor goal	Bundled or unbundled	More about income redistribution and pay backs to constituencies; less about environment	Few conservation gains, high costs, and poor social targeting

[1] Based on Gutman (2005)

3. WWF's approach: equitable PES

WWF and its partners are developing a new, holistic PES approach that explicitly aims to balance poverty reduction with conservation, and to do so with social justice and equity. We see this equitable PES as one financing mechanism for conservation that, in the appropriate circumstances, will deliver both sustainable natural resource management and improved livelihood security for the rural poor.

The map of rural poverty overlaps with the map of rural biodiversity, and in many cases the rural poor, including indigenous people, are the stewards of natural ecosystems. Clearly, these people should be key, active players in any conservation efforts. At the same time, they need secure and improved livelihoods in order to break out of poverty. This is why a key tenet of WWF's work is to integrate social development into conservation efforts right from the start.

However, poverty reduction and environmental sustainability are not always complementary. Without careful design, the poor are likely not to benefit from a PES scheme (see Wunder, 2005) and there is a danger that part of the poverty reduction will be met by unsustainable exploitation of natural capital. Equitable PES addresses this by pursuing a balanced approach towards poverty reduction and sustainable management of environmental services.

3.1 How does equitable PES differ from other approaches?

Equitable PES differs from regular PES mechanisms in two ways. First, equitable PES schemes aim to bring substantial benefits to the poor. This can include both direct and indirect benefits, such as:

- direct financial benefits to individual farmers and households
- direct benefits that accrue at a community level, such as hospitals, schools, and roads
- indirect benefits such as community empowerment and land tenure
- indirect benefits from landscape restoration, such as decreased vulnerability to climate change
- indirect benefits derived from stable social, cultural, and environmental conditions.

Second, equitable PES schemes aim to make payments to the poor in a just and equitable way. This implies that:

- resources are applied to the priorities and needs of the poor
- local values, knowledge, and practices are incorporated into natural resource management practices
- women and marginalized groups, including indigenous communities, directly participate in, and benefit from, the PES mechanism.

Key enabling conditions for equitable PES are outlined in Box 3.

3.2 The importance of partnerships

WWF is a strong believer in, and promoter of, partnerships. Building partnerships is particularly important for PES schemes because they involve stakeholders of environmental services at different levels — from upstream local communities that supply the environmental services to downstream potential buyers of environmental services, such as private companies, plantation owners, and local and national government agencies. Furthermore, in order to successfully implement equitable PES that benefits conservation and contributes to the livelihoods of the poor, partnerships are needed between communities, conservation and development NGOs, research institutes, marketing agents, and others. Collaboration and contributions from all these stakeholders is critical in being able to build effective equitable PES mechanisms.

3.3 Magnifying the views and interests of traditionally marginalized populations

In equitable PES, the providers of the environmental services are poor rural communities. Historically, these communities have often been seriously underrepresented in provincial and national decision-making fora, and as a result their views, interests, and needs have been neglected. They are often geographically isolated, and usually lack financial and other resources to defend their interests in provincial and national decision-making processes.

In its work on equitable PES, WWF therefore aims to strengthen the capacity of community-based organizations as they seek to build

relationships with provincial and national decision makers as well as with a host of other organizations and agencies, including the private sector.

3.4 Equitable PES as one conservation finance mechanism

While WWF believes that equitable PES will succeed where other approaches have faltered, it is not a blueprint "one-size-fits-all" tool that can or should be applied to every conservation or development problem. Neither should it be used in isolation. Instead, PES is one of a broad range of finance strategies for conservation and social development that is best suited to particular circumstances.

It is important to remember that there are major constraints to the development of equitable PES (see Box 3). A number of key questions should be posed when considering a PES scheme for a particular area:

1. Can both the social and conservation goals for the area in question be clearly stated?
2. Does achieving these goals require significant changes to the current use of natural resources?

Box 3

Key enabling conditions for equitable PES

Willingness to pay
Without a buyer for environmental services, PES schemes are inappropriate. Willingness or even ability to pay for environmental services has been a major constraint to the widespread use of PES, especially in watersheds.

Willingness to sell
Likewise, PES schemes need a seller. Some communities refuse to "negotiate" natural resources because of cultural guidelines, or out of fear or ignorance that PES "payments" and "markets" are euphemisms for control or appropriation of natural resources by western-based multinationals (Wunder and Vargas, 2005).

Well-defined property rights
Well-defined property rights to both land and natural resources are essential for viable and sustainable PES initiatives. For equitable PES, with its focus on conservation and poverty reduction, ideally the right to sell the services of the natural resources will be in the hands of the rural poor. However the poorest people are often landless and lack appropriate property rights to the land on which they are settled. Furthermore, they may lack the skills, knowledge, and resources to participate effectively in a PES scheme and therefore be marginalized from the process (Landell-Mills and Porras, 2002). PES mechanisms that work for those who own or have access to land should not have a negative impact on those who are landless and/or disadvantaged.

Good understanding of environmental characteristics and linkages
It is very important to clearly understand and document the relationship between land use, the provision of the environmental service, and the economic benefits. This gives buyers a degree of certainty that the intervention upon which their payment is based will realize the quantity and quality of the service. Long-term payment mechanisms that emphasize contingency must be underwritten by appropriate data and models.

Minimal transaction costs
The costs of establishing and maintaining PES schemes are often relatively high and a constraint to the development of equitable mechanisms. The key is to establish a mechanism where the costs of capturing the environmental service are lower than the benefits it provides. Benefits are easiest and cheapest to capture when users are already organized (such as through municipal water supplies, irrigation systems, etc. in the case of freshwater services) and when some form of payment mechanism is already in place (such as a domestic water fee).

Mechanisms for regular and contingent payments
Financial transfer mechanisms must enable regular and contingent payments between buyers and sellers of environmental services.

Appropriate legal frameworks
Ideally, legal frameworks in favour of poor communities will be in place that support PES schemes and serve as an enforcement and compliance mechanism. However, in many developing countries where equitable PES mechanisms are relevant, policy governing natural resources and land use are not integrated. This presents a significant challenge to the scaling up of successful local level pilot projects. At the very least, there can be no critical policy or legal constraints that could prevent implementation.

Dialogue between stakeholders
Fora for stakeholders and organizations involved in a PES scheme (including buyers, sellers, intermediaries, and facilitators) need to be established and strengthened in terms of governance, negotiation, conflict resolution, monitoring, information sharing, and natural resource management.

3.Is there is a clear relation between the conservation goals and an ecosystem service(s) that are valuable to would-be payers, or at least to a relevant sector of society?

4. Are payers that actually can pay, and may be motivated to pay, being targeted?

5. Is there a good idea of how the money collected will be used?

6. Is there a good idea of how the rural poor would participate in and benefit from the PES scheme?

7. Are regulatory and institutional frameworks already in place that may facilitate the adoption of a PES scheme and the participation of the rural poor?

If there is not a good answer to question 1 and mostly positive answers for the remaining questions, then other financing schemes are probably more appropriate for the conservation and development project in question.

In addition, the long-term sustainability of equitable PES as a finance strategy should be considered. This is hard to assess at present given that most initiatives are relatively new. Pagiola et al. (2002) identify three crucial factors for sustainability:

- Continued demand for the services being sold
- Continued ability of suppliers to provide the services
- Maintenance of the necessary institutional structure.

Cities, industry, mines, and dams may seem unlikely partners for conservation efforts — but in fact they can be valuable buyers of environmental services.

4. Examples of equitable PES projects

Together with various partners, WWF is working on a number of equitable PES schemes around the world, with a focus on those for watershed services. We are particularly concerned with addressing the identified limitations and constraints to traditional PES schemes outlined in Chapter 2. Most of our projects and sites are still in their early stages, but nevertheless provide valuable insights into what is needed for successful schemes that can be replicated and up-scaled.

4.1 Equitable Payments for Watershed Services: a joint WWF, CARE, and IIED project

WWF is working with CARE and IIED on a joint program to establish Equitable Payments for Watershed Services (PWS) in 10 selected watersheds in Asia, Africa, and Latin America. In all project sites, the providers of the environmental services are poor rural communities. The selected watersheds are characterized by a high degree of complexity, but all have two common features:

1. High levels of biodiversity combined with high rates of land-use change affecting biodiversity
2. High levels of poverty

The program proposes to demonstrate how equitable PES can reverse forest loss through addressing the core drivers of land-use change. Improved land management in the water catchment areas is also expected to lead to improved water quality for both rural and urban consumers. In this way, the program aims to contribute significantly to the MDG 7 targets on environmental sustainability in the selected countries and watersheds.

The program is currently in Phase 1, an 18-month preparatory phase whose main objective is to prepare and establish solid, verifiable business cases for equitable PWS in the 10 project sites. Those sites that have delivered a viable business case and Memorandum of understanding (MoU; see Box 4) within 18 months will receive funding for full implementation of the remainder of the site-level activities. For Phase 1, the program has received funding from the Dutch government (DGIS) and Danish

Box 4

Summary of the WWF-CARE-IIED Equitable Payments for Watershed Services project

Overall Goal: Payments for watershed services are delivering sustainable natural resource management and improved livelihoods for the rural poor.

Specific Objective: By 2010, equitable approaches to PWS have been established in 5 countries, and promoted within a wider learning network of government, private sector and civil society organizations in 20 countries.

Outputs Phase 1: For 10 sites in 5 countries (1) a documented business case for payments for watershed services; (2) an MoU between buyers, providers and facilitators; (3) an indicative work plan and costs for implementation.

Activities Phase 1: (1) Conduct situation analysis and baseline studies; (2) facilitate PWS planning processes; (3) promote economic values of watershed services with potential buyers and sellers, and develop and implement marketing strategies to sell these services to a range of potential buyers; (4) assess and monitor strengths and weaknesses in the institutional framework and capacity of participating organizations; (5) analyze existing policy and legal frameworks relating to equitable PWS; (6) engage key experts in PWS and related issues of business management and socio-economic monitoring to identify and develop relevant methodologies and tools; (7) pre-test and evaluate relevant methodologies and tools for equitable PWS; (8) within each core country, establish and facilitate an action learning network for sharing and reflecting on equitable PWS experience; (9) gather information and training materials relevant to equitable PWS and make these available through a website and newsletter.

Countries: Peru, Guatemala, Tanzania, Philippines, Indonesia

government (DANIDA). The specific outputs and activities for this phase are summarized in Box 4, with some of the key features of the project discussed in more detail below. Overviews of a few project watersheds are provided on pages 12–15 (Project sites 1–5).

Making the business case

One of the biggest challenges in facilitating PWS mechanisms, often under-emphasized in the current experience, is the process of engaging the buyer of the watershed service from the start. Instead, emphasis has often been placed on policy and on the engagement of service providers. As a result, potential buyers of environmental services, and watershed services in particular, are often unconvinced that the opportunities are either ecologically or economically justified.

The WWF-CARE-IIED project takes a different approach by developing a compelling business case with potential buyers at the start of the process. This will be achieved by quantifying the problems associated with land-use changes in the upper watershed to buyers, and by conducting rigorous financial cost-benefit analyses.

Defining equitable PWS

Ensuring that PWS achieves certain standards of social justice and equity is a tough challenge, and raises the question of what standards should apply. Equity at the community level is a particularly challenging condition given that poorer households tend to have little or no land and marginalized groups, by definition, have little or no influence over decision-making at community level. The WWF-CARE-IIED project will directly address this question and help to identify supporting factors and obstacles to achieving these standards. In this sense, the project aims to help define equitable PWS.

Forming partnerships

Partnerships are key to the success of PES schemes. The WWF-CARE-IIED project will engage a wide range of local and national partners for its implementation, with particular emphasis on partnering local communities, local and national NGOs, the private sector, and government agencies. The project also aims to magnify the views and interests of traditionally marginalized populations, as well as forge strong collaborations with other actors working on PWS, notably DGIS, DANIDA, the World Bank, GTZ, IUCN, Forest Trends, and CIFOR. These partnerships must be effective and efficient, and remain accountable to the stakeholders whose interests the project serves.

Sharing experiences and methodologies

PES is an approach in its infancy. The WWF-CARE-IIED project will develop important methodologies and lessons that will contribute to the growing understanding of equitable PES. Critically, the project will contribute grounded experiences from initiatives that will deal directly with the challenge of developing equitable PWS. By sharing this experience between countries as well as between and within environment and development agencies, the project will contribute to the collective understanding of the potential and constraints of PWS. This will allow PWS facilitators to capitalize on successes while avoiding pitfalls.

4.2 Fostering PES: a WWF Macroeconomics for Sustainable Development Program initiative

The WWF Macroeconomics for Sustainable Development Program Office seeks to promote the integration of environmental sustainability and social equity into economic development strategies at national and international levels. One initiative within the program is focusing on how to scale-up current PES schemes to the international level, particularly at the river basin level, so that they deliver substantial and long-lasting conservation while alleviating rural poverty.

The initiative is giving special attention to:

- Increasing the participation of the rural poor in PES schemes
- Bringing the marketing and economic experience and perspectives of the private sector into PES planning
- Delivering better conservation results and integrating PES into current conservation activities
- Building capacity on PES best practices
- Gaining better understanding of the prospects and limitations of small-scale replication of PES schemes.

This three-year initiative started in early 2005. An overview of one river basin project site, the Danube, is provided in the case study on page 16 (Project site 6).

Project site 1: Guatemala

Motagua-Polochic River System

Location: Guatemala's Atlantic Coast; the Motagua and Polochic rivers form part of the larger Mesoamerican Reef Ecosystem river basin.

Origin: Tropical montane cloud forests within the Sierra de las Minas Biosphere Reserve (SMBR).

Importance to biodiversity: One of the most biodiverse regions within the Mesoamerican Biological Corridor; the SMBR itself is one of the largest unbroken extents of cloud forest in Mesoamerica, covering around 1,300km², of which some 65% is primary forest. Water flowing from this system also impacts on the Mesoamerican Reef, the second-longest barrier coral reef in the world.

Human population: Over 400,000 resource-poor people, including several indigenous groups of whom up to 90% live below the poverty line.

Water users: Industry (hydroelectricity, coffee processing, bottling, paper); export and subsistence agriculture; domestic.

Threats to watershed services: Forest and freshwater habitats are being lost and degraded mainly due to deforestation, cattle ranching, forest fires, agricultural expansion, and pollution from pesticides, fertilizers, and domestic and industrial effluent. This has led to declines in water quality and quantity for the various stakeholders in the system, and threatens biodiversity in the wider Mesoamerican Reef system.

PWS project approach: At present there are no financial mechanisms in place to charge and channel user fees upstream to the managers of the SMBR or to compensate forest owners for the important environmental services they provide.

The WWF-CARE-IIED project is addressing this by focusing initially on large water users with the greatest financial capacity and willingness to pay. These potential buyers include 15 municipalities, agro-industrial exporters, the Coca-Cola bottle plant (ABASA), a paper mill plant (PAINSA), a rum plant (LIZASA), a beer company (Cervecería Centroamericana), and a hydropower company.

Wider implications: This PWS scheme is anticipated to have broader implications at the policy level in Guatemala and to serve as a replicable model in Latin America and the world for landscape-scale conservation linking forest, freshwater, and coastal marine biomes.

Other work: This project is one part of a much broader initiative that takes into account other approaches, including integrated river basin management, efficient irrigation systems, scientific research development, clean production, strengthening local water management and governance capacities, and undertaking environmental education and awareness-raising among target groups.

Large industrial water users in the Motagua-Polochic River System will pay for the maintenance of the ecosystems from which the water they use comes.

Project site 2: Peru

Piura River Basin

Location: Northwestern Peru, draining into the Pacific Ocean; the river basin is within the Tumbesian-Andean Valleys Dry Forests Ecoregion.

Origin: Andes mountains.

Importance to biodiversity: The northern coastal prairies, the western slopes, and the surrounding Andean valleys are dominated by highly vulnerable and fragile ecosystems. The watershed's dry and humid forests are centres of biodiversity, and play a fundamental role in the stabilization of micro-climate conditions as well as in water and soil conservation.

Human population: Around 1 million people, with those in the upper basin amongst the poorest in the country. 65.5% of people living in rural highland areas and 64.4% living in rural coastal areas are categorized as poor. Of these, 30.2% in the highlands and 27.3% on the coast are categorized as "extremely poor".

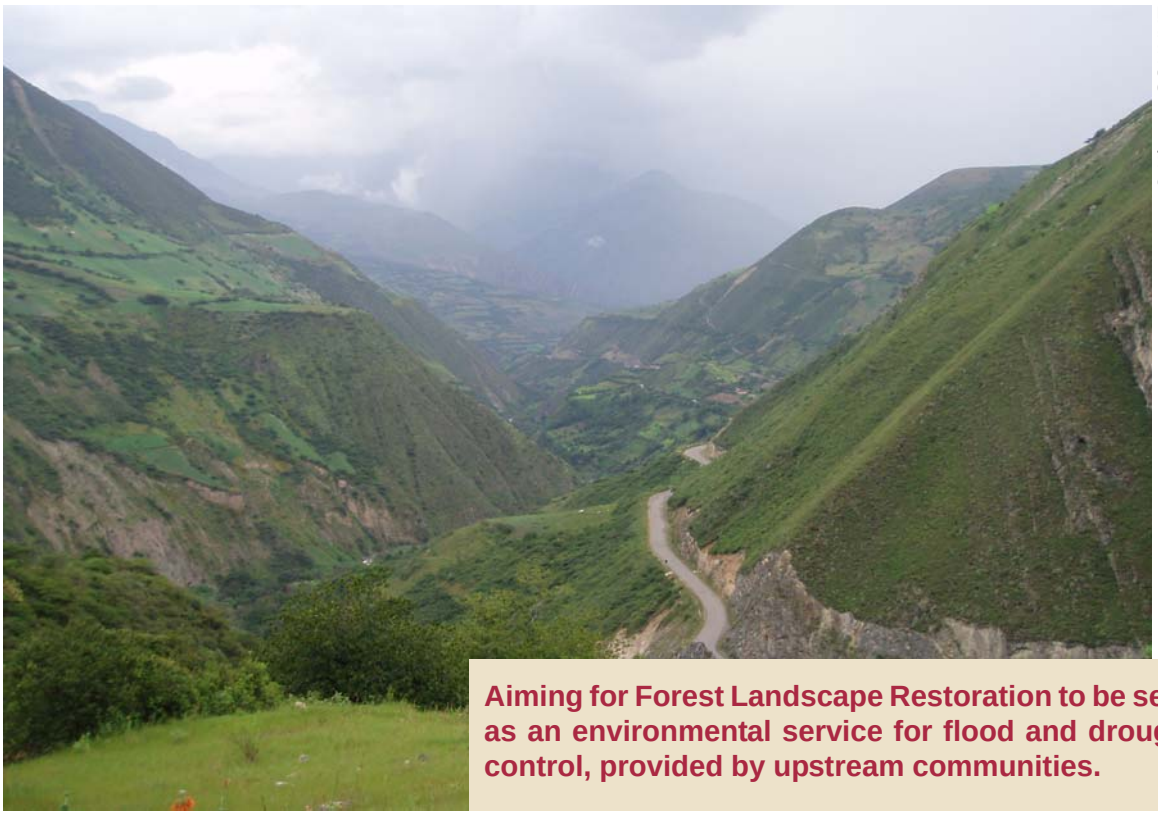
Water users: Agriculture, mining, industry, cattle, trade, and domestic.

Threats to watershed services: Land-use change exacerbated by the El Niño oscillation is leading to deforestation and increased erosion. During El Niño years, increased rainfall favours expansion of the agricultural frontier, while years without rain bring about severe droughts forcing people to fell or burn trees for domestic use (mostly firewood) and slash-and-burn. The region is also facing increased vulnerability to climate change-induced natural disasters such as floods, loss of biodiversity, and land slides.

PWS project approach: Forests within the Piura River Basin are crucial for mitigation against floods and droughts caused by the El Niño cycle and climate change. The WWF-CARE-IIED project is aiming for Forest Landscape Restoration to be seen as an environmental service for flood and drought control, provided by upstream communities and paid for by downstream stakeholders. Potential buyers including mining companies, public sector organizations, small landowners, and urban dwellers have indicated their willingness to participate in such a PES scheme.

Wider implications: The project has wider implications for adaptation to climate change as preparation for climate-change related natural disasters (El Niño-related). The project also directly deals with conflict management between extractive industries and local communities.

Other work: This project is part of a larger development and conservation programme of CARE, WWF, and others.



Aiming for Forest Landscape Restoration to be seen as an environmental service for flood and drought control, provided by upstream communities.

Project site 3: The Philippines

Cantingas/Panangcalan watersheds

Location: Sibuyan Island, part of the Philippine Moist Forests Ecoregion.

Origin: The island's mountain forests.

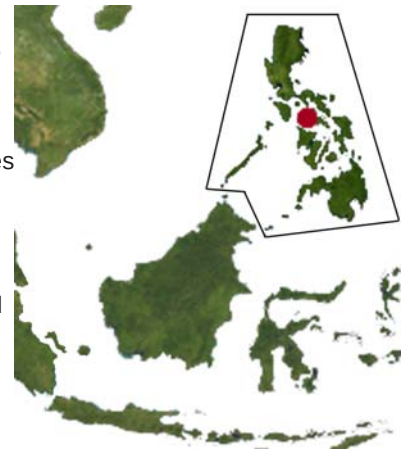
Importance to biodiversity: Sibuyan Island is known as the "Galapagos" of Asia, with around 60 endemic species and several rare, threatened, and endangered plants and animals. It is also one of the few remaining Philippine islands with significant forest cover (about 70%).

Human population: Some 47,000 people, including 335 upland households belonging to the indigenous group Sibuyan Mangyan Tagabukid. These indigenous people, together with other upland migrant groups, form the poorest communities on the island and in the wider province.

Water users: Agriculture; domestic; subsistence activities; proposed mini-hydropower plant.

Threats to watershed services: Forests are being lost and degraded due to illegal logging, unsustainable harvesting of non-timber forest products, and soil erosion from unsustainable farming practices.

PWS project approach: The Sibuyan Mangyan Tagabukid, who hold ancestral domain title to two upland forest blocks, are entirely dependent on the forests for their survival. In 2000 they formed an organization, Asosasyon ng Tribung Sibuyan Mangyan Tagabukid (ATSMT), to implement an ancestral domain management plan, which provides for the conservation and sustainable use of their domain. The WWF-CARE-IIED project will provide funding for the ATSMT to continue its work. The local government unit of San Fernando, Romblon Electric Cooperative, and WWF-Philippines will pool resources to seed a water fund, which will finance nursery establishment, tree planting, and forest patrols to stop illegal logging activities. Romblon Electric Cooperative has also committed to set aside an annual amount for watershed protection once the power plant is operational.



Wider implications: The project will facilitate the empowerment of the Sibuyan Mangyan Tagabukid through capacity building of the ATSMT, as well as facilitate the development of linkages between the Sibuyan Mangyan Tagabukid and external support institutions.

Other work: This project is part of an ongoing Integrated Conservation and Development project on Sibuyan Island. WWF, in close collaboration with other NGOs and government agency partners, has assisted the Sibuyan Mangyan Tagabukid in securing tenure and improving natural resource management in and around Mt Guiting-Guiting Natural Park.

Project site 4: Tanzania

Uluguru Mountains Catchment

Location: 200km west of Dar es Salaam, draining into the Indian Ocean; part of the Eastern Arc Montane Forests Ecoregion.

Origin: Forests on the Uluguru Mountains.

Importance to biodiversity: The Uluguru Mountains are one of the ten most important tropical forest sites for conservation in Africa. They are a key element of the Eastern Arc Range, whose natural forests are recognized as one of the 25 richest and most-threatened reservoirs of plant and animal life on Earth.

Human population: Around 100,000 people live in poor rural communities on the northern and eastern sides of the mountains. In addition, the 3 million people living in Dar Es Salaam and 500,000 people living in Morogoro Town are dependent on this watershed for their water and food.

Water users: Agriculture; domestic; subsistence activities.

Threats to watershed services: Forests are being lost and fragmented at an alarming rate due to felling of trees for timber, collection of firewood and building poles, uncontrolled fires, and clearance for subsistence and cash-crop cultivation. As a result, the catchment forests can no longer hold enough water during the wet season, giving rise to critical water shortages in many parts of the Dar es Salaam, coast, and Morogoro regions.

PWS project approach: Communities living in the Uluguru Mountains are heavily dependent on the forests for their livelihoods. In addition, while expanding agriculture up the slopes has led to forest loss, these farms are now important producers of fruit and vegetables, and so vitally important for the welfare of the mountain communities as well as the people of Dar es Salaam. The WWF-CARE-IIED project aims to help mountain communities stabilize and improve the productivity of their farms as well as prevent further forest loss. The water authorities of Dar es Salaam and Morogoro will be approached as buyers for the environmental services being provided by the mountain communities.

Wider implications: The project will help promote the PES concept in Tanzania, as well as influence relevant policy and create an enabling environment for PES to function in the country.

Project site 5: Indonesia

Upper Kapuas Basin

Location: Kapuas Hulu District, West Kalimantan, Borneo; part of the Borneo Lowland & Montane Forests Ecoregion.

Origin: Betung Kerihun National Park, part of the mountainous heart of Borneo that is the origin of most of the island's rivers. In addition to the Kapuas River, the longest river in West Kalimantan, two of Borneo's other greatest rivers originate here, the Rejang and Lupar River in Sarawak (Malaysia).

Importance to biodiversity: The watershed has a range of habitats, including lowland Dipterocarp forest, wet hill forest, montane forest, moss forest, and swamp forest. All are extremely biodiverse, home to thousands of different plant and animal species, many of them endemic to Borneo. They also represent some of the last-remaining natural habitats on Borneo.

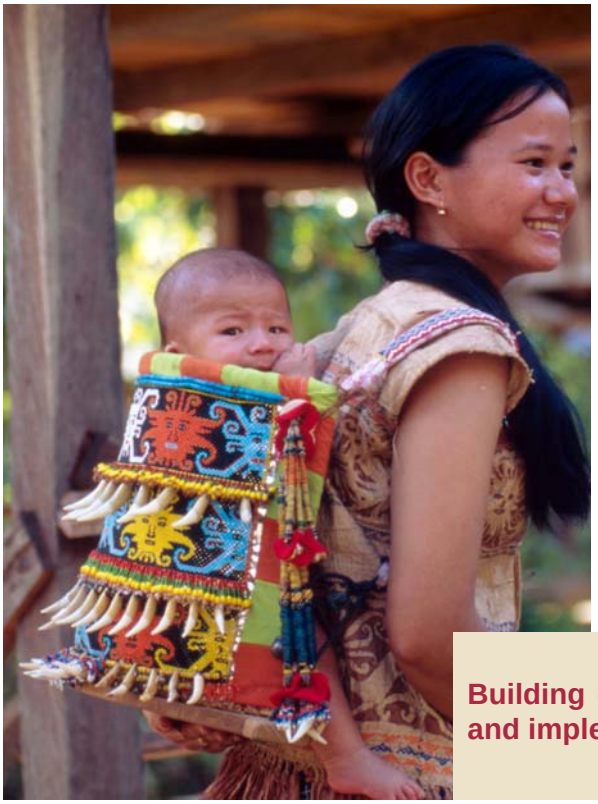
Human population: 203,000 rural poor, including indigenous Dayak tribes and Melayu fishers; a large proportion of the population lives in state-owned forests. The Kapuas River is also important for the other inhabitants of West Kalimantan.

Water users: Agriculture; industry; domestic; subsistence activities.

Threats to watershed services: Forests are being lost and fragmented at an alarming rate due to illegal logging, fires, illegal gold mining, and commercial extraction of forest products at unsustainable levels. This is leading to flooding and erosion.

PWS project approach: The WWF-CARE-IIED project aims to improve watershed management through incentive schemes to Kapuas Hulu as a Conservation District as well as through building the capacity of village institutions in planning and implementation of development programmes. Potential buyers include the Public Water Service, other districts along the Kapuas River, the provincial government, and industry, while the sellers are communities living in and around Betung Kerihun National Park.

Other work: WWF is working with various partners in the Heart of Borneo to help conserve 220,000km² of inter-connected Bornean rainforest, through a network of protected areas and well-managed, productive forest.



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Building capacity of village institutions in planning and implementation of development programmes.

Project site 6: Eastern Europe

The Lower Danube River Basin and Delta

Location: Bulgaria, Moldova, Romania, and Ukraine; part of the Danube River Delta Ecoregion.

Origin: Black Forest, Germany.

Importance to biodiversity: The lower Danube basin is home to a diverse system of natural habitats with rich and unique biological diversity. For example, the Danube Delta is the world's largest reed bed; the breeding and/or wintering area for 300 bird species, including the largest colony of pelicans outside of Africa; and home to 75 species of freshwater fish, half the European total.

Human population: About 83 million people live in the wider Danube basin and more than 20 million people depend directly on the Danube for drinking water. The lower basin includes some of the poorer rural areas of Europe.

Water users: Agriculture, industry, and domestic.

Threats to watershed services: Over 80% of the Danube's wetlands, floodplains, and forests have been destroyed since the beginning of the 20th century, due to development, dam-building, irrigation and drainage, canalization, artificial flood protection schemes, and eutrophication and pollution from industrial, agricultural, and domestic discharges. While the lower Danube is currently less affected than the upper basin, rapid development is a major threat to remaining natural areas.

PWS project approach: Working with an array of institutions and experts, WWF's project aims to identify and support land uses that protect the rural environment and provide environmental services that may trigger payments from the European Union (EU), from country agencies, and from businesses or consumers. In addition, the project will help develop regulatory frameworks and institutions to support and scale-up PES schemes, particularly regarding how to comply with, and benefit from EU's rural and environmental regulations and financing opportunities.

Wider implications: The project could be adopted or adapted by other stakeholders in the wider Danube basin, in other European rural areas, and in other international watersheds around the world.

Other work: The Danube countries, the basin agencies, and many other stakeholders, including WWF and its partners, are working to address environmental threats to the lower Danube and the Danube Delta through various programmes to reduce pollution, restore wetlands and floodplains, conserve biodiversity, and support sustainable use of rural environments.

Supporting land uses, such as traditional agriculture, that protect the rural environment and provide environmental services.

5. Conclusions and recommendations

WWF is working to conserve the world's biological diversity and ensure that the use of renewable resources is sustainable. An essential element of our work is the integration of social development into conservation efforts. We therefore see great potential for equitable PES as a valuable financing mechanism for conservation that can deliver both sustainable natural resource management and improved livelihood security for the rural poor.

WWF calls on all stakeholders — including governments, development agencies, conservation organizations, business, industry, local communities, protected area managers — to explore the value and promote the use of equitable PES.

In particular, we call on Convention on Biological Diversity (CBD) parties and other governments to include equitable PES as part of the implementation of sustainable development strategies and National Biodiversity Strategies and Action Plans. In this context we note that:

- The important economic values of natural ecosystems and biological diversity need to be properly recognized, priced, and internalized into markets through appropriate measures such as equitable PES.
- Sustainable use of biological diversity, one of the three objectives of the CBD, can be enhanced by the application of incentive measures such as equitable PES that reverse the perception of biological diversity as a low-cost externality and prevent its long-term decline and deterioration.
- In the context of increased funding needs for biological diversity, equitable PES has significant potential as a source of sustainable financing for conservation of biological diversity.
- Incentive measures that affect the rural poor can only be sustainable if socio-economic development is integrated into the design phase of these incentives from the start. Equitable PES is designed to address this by bringing substantial benefits to the poor in a just and equitable way.

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7. List of acronyms

ATSMT	Asosasyon ng Tribung Sibuyan Mangyan Tagabukid
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CBD	Convention on Biological Diversity
CI	Conservation International
CIFOR	Centre for International Forestry Research
DANIDA	Danish International Development Agency
DFID	Department for International Development, Forestry Research Programme
DGIS	Directorate-General for International Cooperation
ES	Ecosystem Services
EU	European Union
FAO	United Nations Food and Agriculture Organization
GAAs	Government and aid agencies
GDP	Gross domestic product
GEF	Global Environment Facility
GTZ	German Technical Cooperation
ICRAF	World Agroforestry Centre
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
IUCN	International Union for the Conservation of Nature
MDG	Millennium Development Goals
MoU	Memorandum of Understanding
NGO	Non-governmental organization
PES	Payments for environmental services
PWS	Payments for watershed environmental services
RUPES	Rewarding the Upland Poor in Asia for Environmental Services They Provide
SMBR	Sierra de las Minas Biosphere Reserve
TNC	The Nature Conservancy
UNEP	United National Environmental Programme
WCS	Wildlife Conservation Society
WWF	World Wide Fund For Nature

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WWF is one of the world's largest and most experienced independent conservation organizations, with almost 5 million supporters and a global network active in more than 100 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

– conserving the world's biological diversity

– ensuring that the use of renewable resources is sustainable

– promoting the reduction of pollution and wasteful consumption.

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